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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

JENKINS, DANIEL J

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/779,664

Applicant(s)

SHIPTON ET AL.

Examiner

Daniel J. Jenkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/18/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-6, 15-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141).

Wukusick et al. disclose the invention as claimed. Wukusick et al. disclose at Table 1, page 3, a nickel alloy comprising:

wt%	Wukusick et al.	claimed by Applicant
Cr	5-10	4-8

Al	5-7	5-6.5
Co	5-10	2-6
Ta	3-8	4-8
Re	0-6	3-5
Hf	0-0.5	0.1-0.5
C	0-0.07	0.04-0.1
Si	not mentioned	0.05-0.3
B	0-0.015	0.003-0.01
W	3-10	<5
Pt	not mentioned	<5
La	not mentioned	0.003-0.008
Y	0-0.075	0.003-0.008
others	0-2 Mo, 0-2 Ti	not mentioned

Thus, Wukusick et al. teaches alloy elements that substantially or completely overlap Applicant's claimed range, except for Si.

Naik et al. teach in the same field of endeavor at Abstract and col. 5, lines 46-56, that 0.02-1.0 wt% is added to Ni base alloys for the purpose of improving the oxidation and corrosion resistance of the alloy, without the formation of excessive quantities of low melting compounds.

It would have been obvious to one having ordinary skill in the art at the time of the invention to add 0.02-1.0 wt% Si as taught by Naik et al. to the invention of

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Wukusick et al. in order to improve the oxidation and corrosion resistance of the alloy of Wukusick et al.

Regarding claims 2, 3, 15, 16, 17 and 18, the alloy of Wukusick et al. may contain further elements, such as Mo and Ti, however, as each of the ranges for these elements includes zero, they may be omitted.

Regarding claim 4, the alloy of Wukusick et al. further contains 3-8 wt% W and 0-0.075 wt% Y. It would have been within the common knowledge of one of ordinary skill in the art at the time of the invention to optimize the content of Y in order to maximize the added oxidation resistance of the alloy (for support see Naik et al. at col. 6, lines 30-36).

Regarding claim 5, Wukusick et al. teach an alloy which consists essentially of Cr, Al, Co, Ta, Re, Hf, C, Si, B, W and Y, with the balance Ni, given that the alloy of Wukusick et al. may contain further elements, such as Mo and Ti, wherein each of the ranges for these elements includes zero.

Regarding claim 6, the values for Al, Ta, Re, C, Si, B and Y fall within the disclosed range of Wukusick et al. in view of Naik et al. It would have been within the expected skill of a routineer in the art to have optimized the composition of these elements in order to maximize chemical and mechanical properties of the alloy. The values of Cr and Co are just outside the ranges disclosed by Wukusick et al., and are close enough (4.5 wt% vs 5.0 wt% Cr and 4 wt% vs 5 wt% Co) that one of ordinary skill in the art would have expected that the two values would yield the same properties. See MPEP 2144.05.

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4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. in view of Naik et al. and further in view of Sato et al. and Kondo et al.

Wukusick et al. in view of Naik et al. disclose the invention substantially as claimed (see paragraph 3 above).

However, Wukusick et al. in view of Naik et al. disclose value of W outside of the amount as claimed (3-10 wt% vs 2 wt%).

Sato et al. teaches at col. 9, lines 1-8, in the same field of endeavor, to add W in amounts in as small amounts as 2 wt% in order to improve alloy strength.

It would have been obvious to one having ordinary skill in the art to add as little as 2 wt% W in the invention of Wukusick et al. as taught by Sato et al. in order to still maintain strength properties of the alloy while minimizing the alloy effects of W in combination with the other alloying components while still maintaining the desired strengthening effect.

Additionally, Wukusick et al. in view of Naik et al. do not disclose the addition of 0.003-0.008 wt% La, Wukusick et al. silent as to La and Naik et al. at col. 6, lines 30-36 teach to add La in an amount of 0.05-0.4 wt%.

Kondo et al. in the same field of endeavor teaches that La in amounts as low as 0.001-0.02 wt% rare earths (including examples of La) are effective in preventing corrosion (see Abstract and col. 1, lines 13-44).

It would have been obvious to one having ordinary skill in the art at the time of the invention to use La in amounts of 0.001-0.02 wt% as taught by Kondo et al. in the invention of Wukusick et al. in view of Naik et al. since Kondo et al. teaches

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that amounts as low as this range are effective in preventing corrosion and smaller and effective amounts minimize interaction with other alloying properties.

5. Claims 7, 11-14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. in view of Naik et al., Schell et al. (US 5,622,638) and Applicant's admission of prior art.

Wukusick et al. in view of Naik et al. disclose the invention substantially as claimed (see paragraph 3 above).

However, Wukusick et al. in view of Naik et al. do not teach the application of the composition to the tip of a gas turbine blade for forming or repair.

Wukusick et al. do teach in his description that his nickel alloy can be used in gas turbine blade applications.

Schell et al. teach to use nickel alloys in a method of applying such alloys to the tip of gas turbine blades for the purpose of repair.

It would have been obvious to use the alloy of Wukusick et al. in view of Naik et al. as a blade tip repair material as taught by Schell et al. in order to have a high temperature corrosion resistant blade tip material.

Regarding claim 11, Applicant admits as prior art (see page 1) that laser deposition (cladding) is a known method of applying blade tip material as applied to Schell.

Regarding claim 12, Schell et al. teach (see claims 1, 7, 8 and 9) a method that includes laser depositing a Ni alloy to the tip of a gas turbine blade to a near-net shape followed by machining to achieve the final shape.

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Regarding claim 13, Schell et al. teach (see claim 9) that the deposition is applied by a laser fusing process.

Regarding claims 14 and 20, Applicant admits as prior art (see page 1) that a conventional blade tip addition is a squealer.

6. Claims 8-10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. in view of Naik et al. and further in view of Mukira et al. (US 6,468,367).

Wukusick et al. in view of Naik et al. teach the invention substantially as claimed (see paragraph 3 above).

However, Wukusick et al. in view of Naik et al. do not teach a method of repairing a gas turbine blade comprising applying the Ni alloy to a damaged portion to the gas turbine blade.

Mukira et al. teach at col. 1, lines 20-35, that it is common knowledge to apply a repair Ni alloy to a damaged turbine blade by tungsten arc welding process to repair the blade.

It would have been obvious to one having ordinary skill in the art to use a Ni alloy with good temperature properties, as the alloy of Wukusick et al. in view of Naik et al., together with the teaching of Mukira et al. to arrive at the welding repair process.

Regarding claims 9 and 10, Mukira et al. teach (see col. 1, lines 20-35) that the article is a Ni alloy turbine blade.


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Regarding claim 19, Schell et al. teach (see claim 9) that the deposition is applied by a laser fusing process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Jenkins whose telephone number is 571-272-1242. The examiner can normally be reached on M-TH6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1242. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Daniel J. Jenkins
Primary Examiner
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